MCMCJW

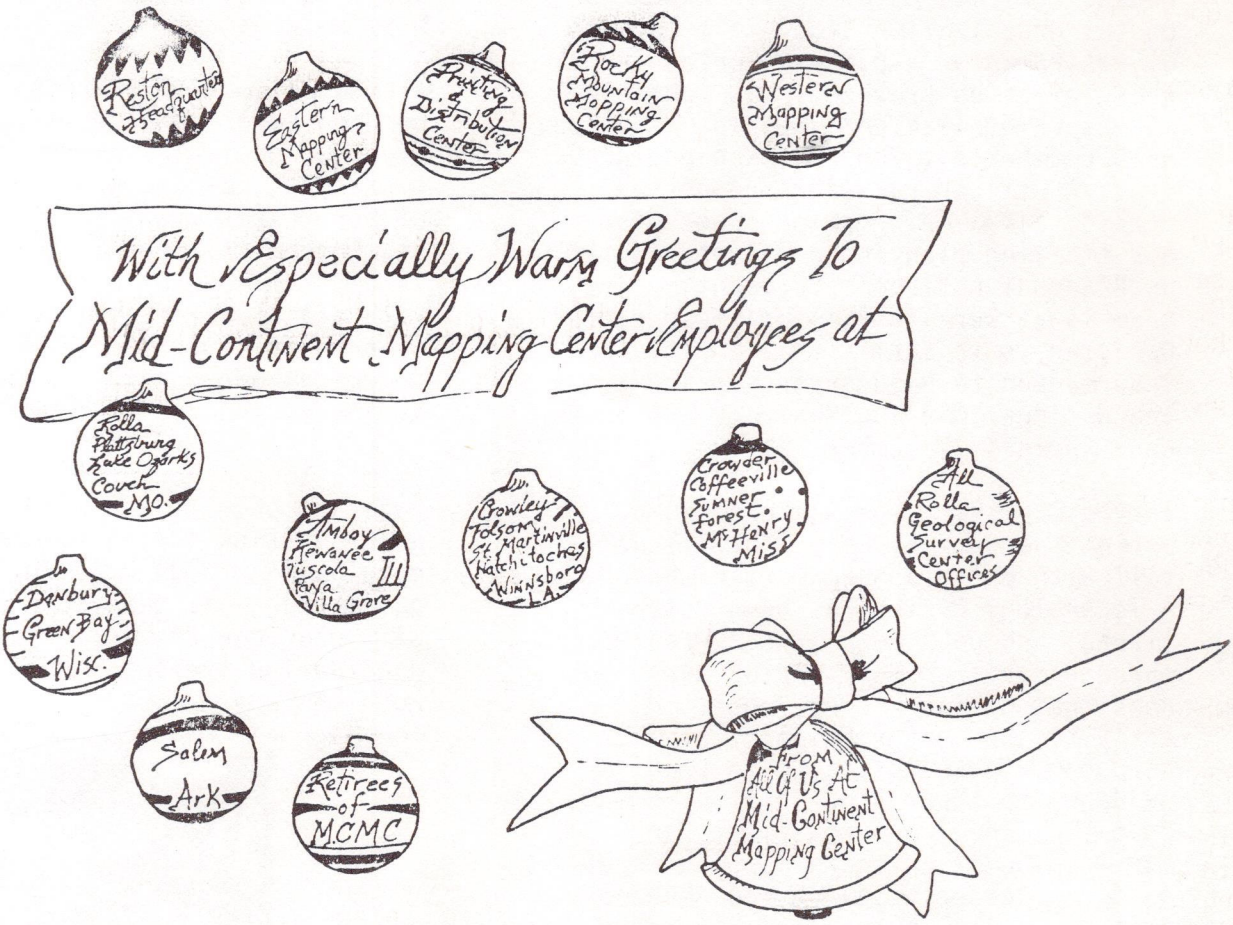
Topographically Speaking

Seasons Greetings

1980

to

The New National Mapping Division


Reston Headquarters
Eastern Mapping Center
Printing & Distribution Center
Rocky Mountain Mapping Center
Western Mapping Center
With Especially Warm Greetings To Mid-Continent Mapping Center Employees at
Rolla Plattsburg Lake Ozarks Couch MO.
Amboy Newanee Tuscola Tonya Villa Grove
Crowley Folsom St. Martinville Natchitoches Winnsboro LA
Crowder Coffeeville Sumner Forest MS Henry Miss
All Rolla Geological Survey Center Offices
Danbury Green Bay Wisc.
Salem Ark
Retirees of MCMC
From All Of Us At Mid-Continent Mapping Center

NOVEMBER-DECEMBER 1980

GEOLOGICAL SURVEY, NATIONAL MAPPING DIVISION
1400 Independence Road, Rolla, Missouri 65401

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FROM THE DESK OF THE MCMC CHIEF

In view of Mr. Southard's recent memo referring to Mapping Center reorganization plans, I feel it is timely to give MCMC employees an update on local progress. Despite considerable attrition on the Organization Study Team because of retirements, a package containing reorganization proposals was submitted to the Chief, National Mapping Division, on September 5. The Division Administrative Officer has since requested more detailed information concerning our staffing plan and a changed format on Branch functional statements. The team is at work fulfilling these needs. Our plan is to submit this additional information to Headquarters prior to the National Mapping Managers' Conference in early December.

In the meantime, some interim MCMC action has been taken which will dovetail with our planned reorganization. A Technology Office has been established, and John Powell was selected through merit promotion procedures to head that office. John reports directly to the Center Chief. The Technology Office is expected to provide guidance to the Center in procurement, installation of new equipment, and application of advanced mapping technology; oversee research and development of digital techniques, exchange scientific information with research organizations and other mapping agencies; and monitor contracts for digital equipment and software. John will also be administratively in charge of the Instrument Maintenance Unit, although at present this is only in an acting capacity.

The Geographic Investigations Office is now a part of MCMC. George Loelkes, Chief of that office, also reports directly to the Center Chief. GIO formulates and conducts land resource research using remotely sensed data, digital spatial data, socio-economic data, and other natural resource and environmental data. It holds seminars and workshops for the land-resource-planning community to share research findings and to pass along methodologies. These activities are vital in identifying and meeting the needs of land resource planners. In addition, GIO maintains quality assurance on the land use/land cover mapping produced in the Mapping Center.

A great amount of planning remains to be done before the proposed reorganization can be implemented. It is totally contingent, of course, upon approval of our tentative package at Division and Bureau levels. If and when approval is received, we plan to hold meetings with all employees to explain changes. Changes are expected to be primarily organizational, rather than a restructuring of individual jobs.

As Mr. Southard wrote, " . . . organizational changes can also create greater opportunities for individual growth and development." We believe that a reorganization will benefit employees and will gear our Center for the job to be done during the last two decades of the 20th century.

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DIGITAL ELEVATION MODELS

by John Kelmelis

Digital Elevation Models (DEM's) are ordered arrays of x, y and z data. That is, they are a collection of coordinate information that follows a regular pattern, such as a grid of x and y positions.

DEM's are a type of Digital Terrain Model and as such have been with us for at least twenty-five years when experimental work was being done on what was then a relatively new technological advance called the computer. Since then computer technology has evolved to its present, highly sophisticated state.

The increasing capabilities of the computer and of data storage and retrieval systems have made DEM's a practical and highly sought after cartographic or perhaps more precisely, cartodigital product.

There are a number of methods in use to produce DEM's. Here at MCMC we use the Digital Profile Recording and Output System (DPROS) to produce our DEM's for the data base. This system utilizes a standard Kelsh plotter that has been converted into a Kelsh Profiler by attaching a series of screws, motors, and electronic encoders to it. Likewise, a captured German WW II C-8 was adapted to the system. Both are interfaced to microprocessors that perform the system control functions and output the data to a magnetic tape.

The data is collected as a series of profiles recording the changes in elevation that occur along each scan of the stereo model. The photogrammetrists who operate the profilers must perform a series of complex algebraic and trigonometric calculations while setting the models to insure that the exact orientation can be obtained. This is especially important since the operator cannot look at his results to determine how well he has done until his output data has been processed through a series of computer programs that manipulate the data until it is the proper format.

The data has been tested by hand in the past but this took several days of tedius mathematical calculations to perform the necessary coordinate transformations, interpolations and statistical analysis. A program is being brought up on P.E. computer system to perform these calculations thus freeing the operators to spend more time in analyzing problem areas and in actual production.

There are other systems used for producing DEM's. The Gestalt Photo Mapper 2 (GPM-2) is in use in Reston and provides a fully analytical method of producing DEM's. Other Mapping Centers use still different technologies.

High altitude photography is used by these systems to produce DEM's to fill the 7 meter RMSE and 15 meter RMSE data bases.

Another system in use at MCMC to produce DEM's is the stereomodel digitizing operation. Actually, DEM's are a spinoff of that operation but these DEM's hold much promise for special and detailed uses. (See article entitled Monarch Mine Fire Mapping, Gary McKeown in this issue.)

Although DEM's produced by that method are far more accurate than those produced by the other methods described they have the disadvantage of taking far longer to produce. Here one will have to weigh the importance of accuracy against the pressures of time and cost.

There has been an excellent user response to the DEM's that are available and the primary complaints heard at the Remote Sensing Symposium in Kansas City in October were that we do not have enough coverage. We are not producing them fast enough to meet user demand. Digital Elevation Models were the most talked about USGS product displayed at that symposium.

Feedback on the uses has been spotty but some users have requested a sample tape, then, after testing it they have contacted Reston requesting everything

CONTINUED ON PAGE 4

CONTINUED FROM PAGE 3
else that was available over a given area. Of course, they have not told us what they wanted to do with the data.

In addition to the overburden studies for strip mining DEM's can be used to provide profiles, cross-sections, areas and volumes for engineering design and alternative route analysis.

Examples of DEM uses are:

Intervisibility Studies. These can be used to speed the planning of microwave tower corredors saving the tedium and cost of manually examining numerous line maps for high points for intervisibility.

Slope calculations can easily be made by computer to provide input for flood runoff determination. This increases the speed and accuracy of flood calculations.

Volume calculations can easily be made to determine the quantity of water and the area that would be covered by various dam designs. The results are more accurate and orders of magnitude faster than conventional methods.

Navigation Control Systems for aircraft can use this type of data to increase accuracy and reduce the possibility of accidents due to low visibility.

The list is limited only by the imagination. DEM's together with other forms of digital cartographic data make up one of promising, exciting and versitile areas of mapping.

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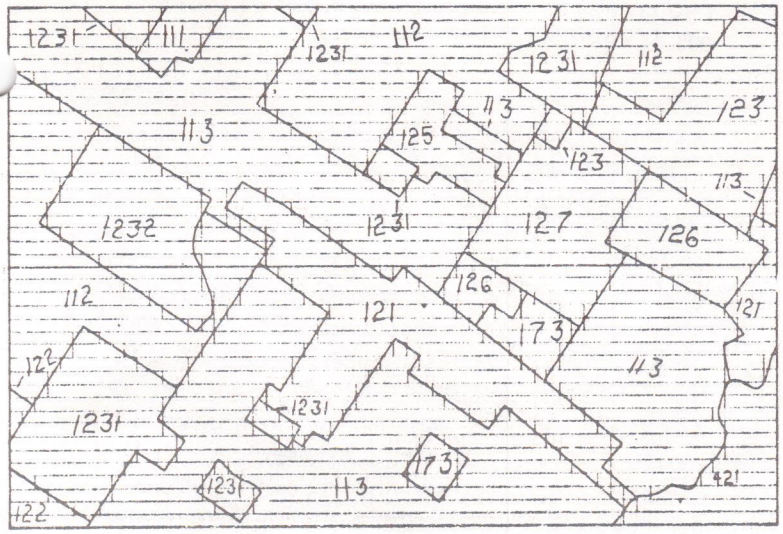
PAPER PRESENTED AT FALL TECHNICAL MEETING

by Steve Miller

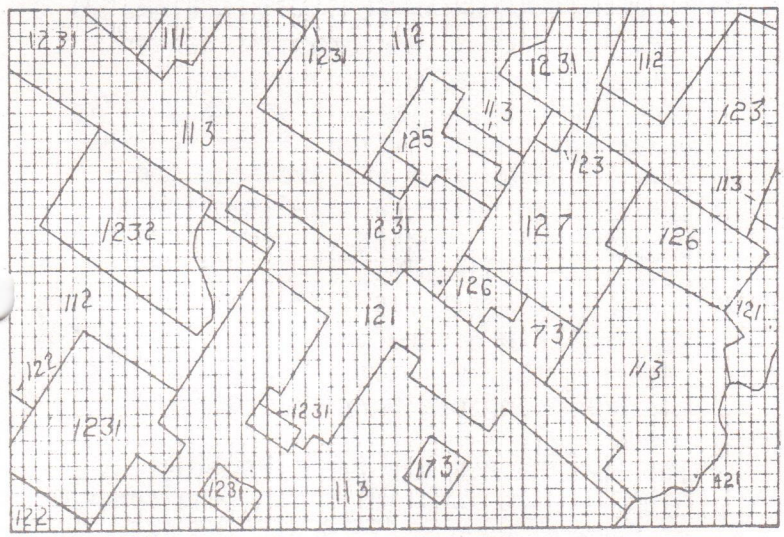
For several years, the former Geography Program of the Survey has had the responsibility for the production of land use/land cover and associated maps. This series of map overlays depict land use/land cover, census units, county boundaries, hydrologic units, Federal land ownership, and, where available, State land ownership. The overlays are scheduled for completion by the mid-1980's. Both graphic map overlays and digital representations of the map overlays are being produced for a wide variety of users engaged in land resource management and planning.

With the recent merger of the various organizations now comprising the National Mapping Division (NMD), the production of these map overlays and the derived digital data has become the responsibility of the NMD. The problems and prospects associated with these products accompany the responsibility for production. This is particularly true for digital data which offers greater flexibility and adds new dimensions to our ability to use maps as tools for analysis. As such, the better understanding of the usefulness of the digital data is in the interest of the NMD. This includes research as to how to best represent and structure the data for users who are interested in retrieving or analyzing the data through a geographic information system.

Currently, the map overlays are digitized in accordnace with the GIRAS (Geographic Information Retrieval and Analysis System) system. The boundaries of the polygons on the map overlays are precisely replicated and recorded as x, y coordinates. Operations such as plotting selected categories from an overlay or altering color and symbolism for map categories are handled easily for data in this format. The majority of more involved retrieval and analysis operations, however, are not handled as easily with data in the x, y coordinate format as with data in a raster or grid cell format. In order to cross-tabulate information from the various overlays (e.g., land use within county boundaries), the GIRAS system converts the data from x, y coordinates into a grid cell format. In this case, and in most past applications using the grid cell format, the individual grid cell becomes a logical entity (i.e., a record in a computer file) for storing and processing the



COMPACT GRID CELL FORMAT



CONVENTIONAL GRID CELL FORMAT

data. Unfortunately, this often has led to the selection of a larger grid cell size (in order to control the volume of data) which may in turn lead to inaccuracies in the data representation and loss of detail. Use of smaller grid cell sizes (i.e., higher resolution cells) very quickly can lead to overwhelming volumes of data. At 200 meters square, a single 1:250,000 sheet contains some 500,000 grid cells; at 100 meters, 2,000,000; and at 50 meters, some 8,000,000. A pressing question regarding these digital data sets then becomes how to accurately represent the original map (within specified accuracy limits) and yet facilitate retrieval and analysis operations on the data.

Recently, I had the opportunity to represent the Division and present a paper on this topic at the Fall Technical Meeting of ASP-ACSM. The paper described part of our research in the Geographic Investigations Office here at MCMC. Specifically, we have devised and implemented a prototype data structure using a compact grid cell representation for the areal data sets of the land use/land cover map overlay and other overlays. In this scheme, a logical entity, both for storage and processing, is a "data string" (i.e., a series of horizonally, contiguous grid cells). The average length of a string varies in relation to the density and complexity of the original map overlay, but it average 8 to 10 grid cells for the most complex overlay--the land use and land cover overlay. Even when the various data files are composited (or merged), the average length of strings ranges from four to six cells in length. This results in large savings in storing, reading, or writing the data. The potential reduction for data storage is graphically illustrated (to the left). The compact grid cell data representation is pictured above the conventional grid cell data representation.

In addition to reducing storage requirements, the software implemented for retrieval and analysis also uses the data string as a unit for retrieval and analysis processing. This greatly reduces core memory requirements and the number of operations needed for processing.

We have utilized this data format, and the processing concepts, in an analysis of land use/land cover and associated data for the Three Mile Island area and in an analysis of county and soils association date for areas in Louisiana. Further refinement of these concepts will take place as a result of two projects in Missouri. One involving forest resources to be used for energy production and a second involving the analysis of the possible impacts of an accident at the Calloway nuclear power plant site.

Continued on page 6

Continued from page 5

In the future, we hope to finalize and further document the results of our work. More importantly, we will address the issue of how to interrelate digital map production efforts from the topographic map series with on-going geographic information systems activities.

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PLANS & PRODUCTION: A KEY-HOLE GLIMPSE

by Bruce A. Bauch

The Branch of Plans and Production is responsible for the various planning, programing, fiscal control, and cartographic information activities of the Mapping Center. Procurement of supplies and equipment, maintenance of fiscal records, preparation of travel authorizations, and processing of pay check information are also included in the many Branch functions. Fiscal control, planning, and resource programing are primarily the responsibility of the Program Control Section. Dissemination of information concerning cartographic products is usually delegated to the National Cartographic Information Center (NCIC) regional office. Recently, the computer center personnel joined the Branch and have been increasingly active in the processing and distribution of cartographic data. In addition to these activities, the Branch has the responsibilities associated with user requirements and inter-agency mapping program coordination. The Special Assistant for Mapping Requirements is independent of NCIC and the Program Control Section but works closely with personnel from both areas.

Generally, program control responsibilities range from the original authorization request for a particular project and scheduling the work phases, to maintaining the status of the project throughout the production cycle. As these activities are occurring, the section also recommends changes and additions to the mapping program, provides input to the Division concerning long- and short-range objections, and maintains fiscal records for Center expenditures. Accomplishing these various program control activities requires the full-time work of nine employees.

Distribution of cartographic information through the NCIC regional office keeps nineteen employees busy. Only sixteen of these are located at Rolla, while the other three provide NCIC services from the Bay St. Louis office. Included in the NCIC staff are the data acquisition, user services, and technical information teams. Major responsibilities of the NCIC office include storing the various information and map materials used in production, providing answers to inquiries from map users, and serving as an order processing facility for user purchases of available mapping data.

With the increasing demand for digital cartographic products and for automated data processing, the computer center's role in the MCMC mapping process is much more active than it was only a few years ago. Acquisition of the Perkin-Elmer minicomputer has provided the Center with enhanced data processing capabilities. Recent updating of the Datapoint system has also provided users with more efficient data processing. Keeping both of these systems functioning requires the full-time dedication of six employees and one part-time operator.

The Special Assistant for Mapping Requirements identifies map requirements of Federal agency field offices and provides program coordination in order to avoid duplication of effort. While keeping in contact with Federal agencies, a continual liaison with the map user community is maintained to insure the Division mapping objectives are meeting the needs of the map users.

Coordination of the mapping program at MCMC is becoming more complex as the user requirements create a need for newer and more diversified map products. The Branch of Plans and Production provides the many services and program direction that are required to maintain these constantly changing mapping objectives.

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WOMEN'S CAREER CONVENTION

by Rhonda Stout

The First Annual St. Louis Women's Career Convention was held October 24 and 25 at the Chase Park Plaza. A wide variety of businesses, schools, and professions provided career related information and advice to women eager to enter the job market or move up the promotion ladder. The convention, geared for women, was sponsored by Leigh Communications, Inc., a Chicago firm dealing extensively with problems women face in today's working world. Gloria Steinem, a key speaker, headed several workshop forums dealing specifically with these problems. Ms. Steinem, well known activist in the women's movement is the editor of Ms magazine, a widely read and respected publication.

In addition to the workshops, 77 exhibits were available to provide current information concerning job opportunities. The exhibitors representing a large scope of the job market, ranged from educational institutions of electronic corporations. The Mid-Continent Mapping Center in Rolla, represented by Don Beasley and Rhonda Stout, was one of the many participators in the exhibit portion of the convention. Among the information distributed by MCMC were pamphlets outlining the many opportunities offered by the U.S. Geological Survey, and the needed qualifications for employment.

Because the First Annual Women's Convention in St. Louis was such a success, plans are already underway to continue this annual service to the women of the Midwest.

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SMILE *by Gary Raymond*

Mr. Peter Pineiro, local free lance photographer for Wide-World Photos, Inc., has been in MCMC during October obtaining photographic coverage of various individuals at their duty stations.

The purpose of the photography was to update the news files of the Survey Information Office in Reston, Virginia. Mr. Pineiro's orders were to keep the photography "people" oriented, showing Survey specialists at work in labs, offices, and in the field, using new and interesting instruments and equipment.

Thanks to all employees who cooperated with Mr. Pineiro.

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WE'VE COME A LONG WAY, BABY !
FEDERAL WOMEN'S WEEK
OCT. 20-24, 1980

by Laura Bennett
Peggy Hughes
Sherry Von Klemen

A number of activities highlighted the twelfth anniversary of the Federal Women's Program at MCMC during the week of Oct. 20-24.

For each day of the week one of MCMC's career women were presented with special certificates recognizing them for outstanding performance. They were:

Monday:	Carol Willeford
Tuesday:	Pam Malam
Wednesday:	Carla Brookshire
Thursday:	Brenda Lyon
Friday:	Jeanice Powell

On Friday, Gene Lort.. was given the "FWP Man's Award" in recognition of his interest in equality for all employees.

Beginning the week's activities, Dr. Dee Montgomery, Assistant Professor of Psychology, College of Arts and Science, UMR presented a lecture entitled "Women's Choices in the 80's." Her subject matter consisted of basic steps in a decision process that can prove to be necessary in determining career development and personal achievements for any individual.

On Tuesday, two tours were conducted for new employees which showed the operational activities of the Center.

Continued on page 10

Continued from page 8

A movie entitled "We Are Women" narrated by Helen Reddy, was offered on Wednesday for those interested in viewing it.

The grand finale occurred on Friday, when many of our Federal women dressed to fit the theme of the week "We've Come a Long Way, Baby." Their attire was made up of styles dating from the early 1800's to present day outfits.

The Federal Women's Program Committee would like to thank everyone who participated in making our first Federal Women's Week celebration a big success.

We are looking forward to next year's Federal Women's Week. We hope you are too.

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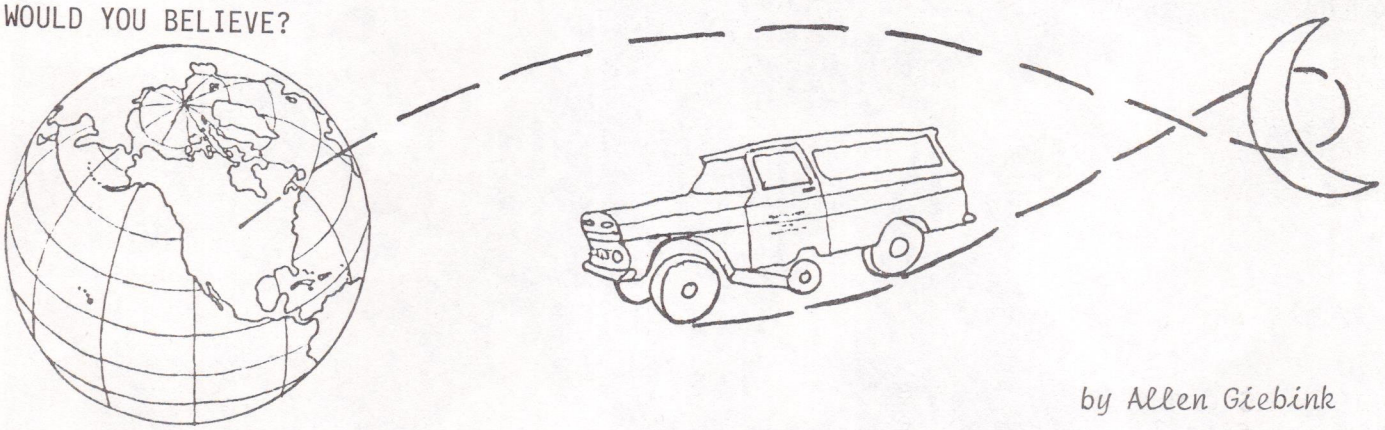
WOULD YOU BELIEVE?



by Allen Giebink

If meritorious service awards were given to equipment, the 1960 GMC elevation meter being retired this month from active service would well deserve such an award. During its service of obtaining supplemental control the elevation meter, pictured below, has traveled a distance approximately equal to a round trip between the earth and the moon. Although its body and chassis made the trip without needing major repair, four engines were required to keep the wheels turning over that distance.

1960 GMC elevation meter

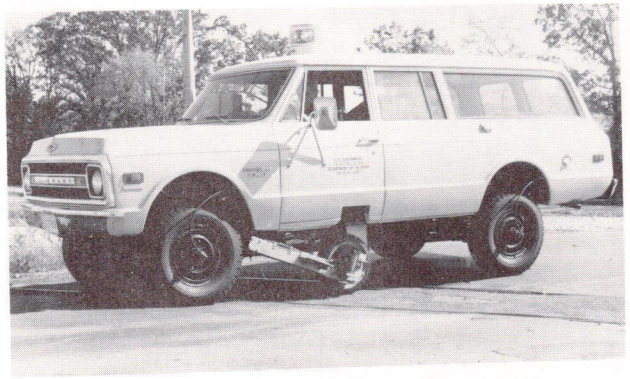
The 1960 GMC elevation meter left for its first field assignment in April of 1961. It was the first such meter built by Sperry-Sun Company and feedback about the operation helped guide the design of future models. Its career continued across all of the Mid-Continents northern states and many of the southern states. Its assignments even included a season in the, then named, Altantic Region.

Over its 19 years of service new life was continually added to its ageing body. From U-joints in Galesburg and a heater in Kansas, to 8 gallons of aluminum paint in South Dakota, its miles of service continued to add up.

Kent Wilson retired in 1977 after 16 years behind its wheel. But the 1960 GMC was not ready to throw in this spare just yet. Ralph Chaney continued as its operator until it rolled its last mile this past October. It returned to Rolla, the city where its career began, under its own power. It

had out lived two newer models, miles younger than itself, that had to be pulled back from the field.

During its years of service about $46,000 was expended on gas and service, which figures to about 10¢ per mile. For years to come, salvaged parts donated from its aged body will continue to support its successors now in the field.



USGS modified elevation meter

The 1960 GMC can never be replaced, but a USGS modified 1970 Sperry-Sun elevation meter will follow in its tread marks. The replacement meter was purchased from a Canadian Surveying Company. This meter was then modified to match the elevation meter designed by MCMC personnel in 1978. A microprocessor was added to be used as the data totalizer and readout control unit for the CRT and printer.

Ralph Chaney at the controls of the new elevation meter

A keyboard is used to enter the needed information during the operation of the meter. The microprocessor prompts the operator through the CRT as to what information is required and also displays the status of the information being gathered as the elevation meter is in operation.

Ralph Chaney left with the newly modified elevation meter November 10th in route to work a number of projects in Illinois this winter season.

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MONARCH MINE FIRING MAPPING

by Gary McKeown

Most of you are probably familiar with the fact that we are currently engaged in a repay agreement with the Office of Surface Mining, Dept. of the Interior. Under this agreement we will be providing a digitally produced graphic, a series of digital elevation models (DEM's), subsurface computations for the top and bottom of a coal seam, and volumetric estimates of overburden and coal within the project area.

The project area is a mining area, about 4 miles north of Sheridan, Wyoming. The area consists of approximately 20 acres. OSM is interested in this area for two reasons: the subsidence of the ground over the old mine shafts and the underground coal fire which is burning unchecked in the mine. The environmental impact of the situation at the mine site is obvious. The air pollution and noxious fumes from the fire are a hazzard to the people living in the area. The fire often causes grass fires during dry weather, and the subsidence holes are hazzardous to grazing animals and prevent any kind of development of the land.

According to a survey report entitled "Effects of Coal Mine Subsidence in the Sheridan, Wyoming, Area," the coal fires probably started as result of conditions created by the subsidence. Subsidence occured when coal pillars, which were left during the coaling

Continued on page 12

Continued from page 11

operations to support the overburden, failed. When the ground subsided, air and mositure entered into the mine area. In those portions of the mine where the right quantities of air, mositure, and coal fragments and dust occured, spontaneous combustion ignited the coal and started the fire. As the fire spread, it burnt and weakened more of the coal pillars which in turn caused more subsidence. If left unchecked, the whole Sheridan area could be involved. It is interesting to note that there are about 250 uncontrolled fires burning in underground coal mines in the United States. There are approximately 5 fires burning in the Sheridan area.

The plan of action for this particular fire according to Merlin Van Dyke, our contact with OSM, is to let a contract for the removal of the coal from the seams surrounding the fire, replace the coal with overburden, and let the fire burn itself out. Payment for the contract will be based upon the amount of overburden removed and replaced, minus the value of the coal which is removed. To estimate the cost of the project, Merlin must know, as close as possible, just how much coal and overburden is involved. This requires volumetric computations, and that is why we are involved in the project. Using our stereomodel digitizing and DCASS system, along with the statistical regression package on UMR's computer, we can provide Merlin with some very accurate computations

Our participation in this project came about primarily because of the efforts of Glenn Osick while he was Special Assistant for Mapping Requirements. Through his contacts in that position, Glenn heard about the OSM project and contacted Merlin to obtain information concerning the project. After finding out what Merlin wanted done, and then evaluating our digital capabilities, Glenn arranged for Merlin to come to MCMC for a demonstration. From that demonstration came our MCMC-OSM digital project.

MCMC's commitment to this project is as follows:

1. We are to provide OSM with one digitially produced graphic. This will be a single, monotone manuscript which Merlin will use as a base to produce a variety of other graphics suited to specific needs.

2. The reason we digitized the area was so we could produce a surface DEM from the digitized data. This DEM will be used in the initial volumetric computations. This DEM, along with the other subsurface DEM's which will be produced, is based on a 3-foot grid system.

3. We will produce two subsurface DEM's. These DEM's will be produced by means of the data obtained from 30 drill holes in the project area. This data will be run through a statistical regression package, which in turn will produce a mathematical surface for the top and bottom of the coal seam. These DEM's will be on the same 3-foot grid system as the surface DEM so that if they were stacked, the same grid intersection in each DEM would be in a column.

4. The fourth thing we will do is compute the volume estimates, using the differences in the elevations between the same grid intersection on each of the three DEM's. There will be two estimates, one for the overburden and one for the coal.

5. After mining operations begin, estimated for June 1981, we will re-digitize the area disturbed by the coal removal on a monthly basis to produce another DEM for use in determining the exact amount of material moved during the month. The mining operations

and reclamation of the land is expected to last 20 months.

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A course entitled "Supervision and Group Performance" was held at MCMC the week of October 27-31. Attendance included 19 people from MCMC, 5 from Water Resources, and 5 from the Bureau of Mines. The instructor was Marvin Ekstowicz from OPM in St. Louis.

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"MIDDLE-AGED ADDICT" HOOKED ON HEALTH

by George Sandul

This is the story of an addict, me. The rapidity with which this overcame me was startling. The first doses were small. My body rebelled. In this early period there was one bad trip after another. Gradually the doses were increased and my body adapted, but I always needed more. I reached new highs and the doses were increased. My appetite was insatiable. I became entrenched in a routine of always needing to reach farther, farther.

Now a hopeless addict, my case is irreversible. The cost has become astounding.

First, a pair of jogging shoes, then a sweat suit and now a new pair of jogging shoes are inevitable. There seems to always be a sweaty clump of clothes lying in the corner to be laundered.

In August when it first struck, the prospect of me propelling this near 40-year-old body for six miles running was insanity. However, there it was. Luring me. Pulling at my near 40-year-old ego. Tempting that middle-age lack of accomplishment. There was a 10,000 meter run on October 25th. I'd never run more than two miles before. However, during a weak moment, basking in the camraderie of it being a neighborhood project, I agreed.

Training started. The beginning was misery and a mild form of masochism. Ace bandages appeared almost everywhere as knees and neglected muscles hollered for help. Gradually, progress was made and small triumphs became larger. A mile and a half, two miles. Stamina increased. The transition from misery to a feeling of well-being was subtle. However, once on the other side, running became joy.

No record time, the race day run itself was merely another rehearsal. Somewhere between mile four and five, euphoria and elation overcame. I floated to the finish line. The sense of accomplishment was overwhelming. The knowledge I'd gained about my capabilities was satisfying.

The running has continued. There is almost a constant healthy glow. Problems don't seem quite as large. I feel more poised. My body is firmer. When everyday problems and tension become overbearing, they will usually disappear somewhere between mile three and four. After a shower, the relaxation is complete. Looking forward to the evening run is exhilarating.

Running. I love it! I'll be running for years to come.

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OCCUPATIONAL HEALTH UNIT

by Minnie Bradford

On November 1, 1970, Marilyn Kirkendall was hired as Occupational Health Nurse for HEW (Health, Education, and Welfare), Kansas City Area. HEW has since been changed to the Dept. of Health and Human Services. Marilyn has, as her area of responsibility, not only employees of the USGS, but those employed by the Bureau of Mines, Social Security, and the Internal Revenue Service.

During the ten years that Marilyn has been Occupational Health Nurse, the use of the Health Unit has more than doubled. There are a couple of good reasons why traffic in the Health Unit has increased over the years. One is that there are more government employees, and two, that the largest group of these employees in this area are under one roof with the Health Unit thereby making it more accessible to them.

Since the beginning of the Health Unit, there has been increased emphasis on Health Education with a film or talk by a knowledgeable individual every few months. There has been increased use of diagnostic procedures, as regards physical examinations. Two of the newest diagnostic tests recently put into practice here are the use of the "Audiogram" for hearing tests, and the "Pulmonary Function Test" for the testing of breathing. Needless to say, immunizations have increased considerably along with other health screening tests. Because of today's complex society, counseling for job and family related problems has also been on the increase. Occupational safety procedures have greatly improved in recent years and also require Marilyn's involvement in that facet of health education.

Marilyn, who hails from Wood River, Nebr., started her nurse's training at Dueschne College in Omaha, Nebr., where she took her first year's training. She completed her training at St. Francis School of Nursing in Grand Island, Nebr.

Marilyn's training hasn't ceased just because she finished her formal education. The Dept. of Health and Human Resources has a continuing training program which requires her to attend learning sessions as to new procedures and updating of techniques. Because of Marilyn's training, expertise, and common sense, many a federal employee can testify that she is of inestimable value in an emergency situation.

Marilyn enjoys her work and says she finds it challenging and rewarding and filled with plenty of diversification. In her own words she says "I never know what's going to walk through that door next."

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SCHOOL TOURS

Area schools continue to visit our Center as part of their education program. November visitors have included 9 students from the ASCE Chapter at UMR, 37 first year surveying students from Linn Technical School, 35 students from the Steelville High Math Club, and 7 Cartography students from the University of Missouri-Columbia.

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FALL DANCE

by Bob Yenzer

About 60 people attended the fall dance sponsored by the social committee. The dance was held at the VFW Hall on Saturday, October 18. Music was provided by The Stewarts.

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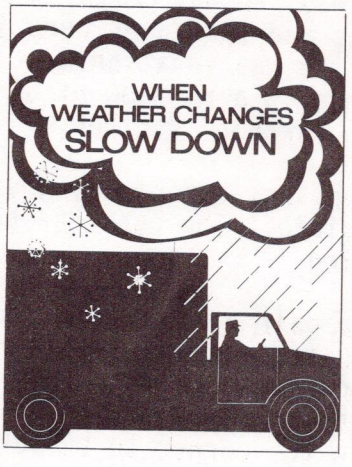
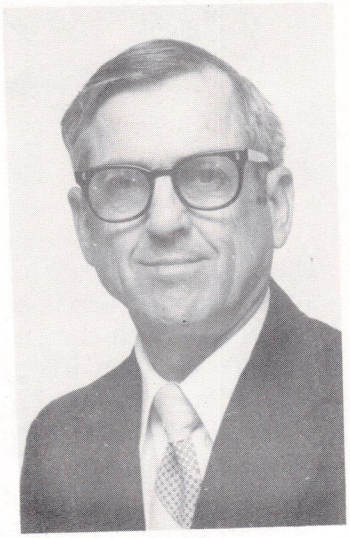


MCMC RETIREES



William T. Prouty, Mid-Continent Mapping Center, retired on October 6, 1980, with over 35 years of Federal service.

Mr. Prouty served in the U.S. Navy from 1943 to 1946. He began his career with the Geological Survey in 1948 as a Cartographic Draftsman in the Branch of Cartography. From 1958 to 1963 he served on various field assignments with the Branch of Field Surveys. In 1963 Bill returned to the Branch of Cartography, and advanced to the position of Cartographer in the Review Editing Group, the position from which he retired.

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RETIREMENTS (RMMC)
Robert C. Foley
Wilson Wells
Raymond E. Hill
John C. Zuck
Douglas Hardwick
Irene M. Duzenack

****

IN MEMORIAM

Pauline M. Wilkinson, Br. of Carto.

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AWARDS

QUALITY INCREASE
Lynn L. Allison

30-YEAR
Julia J. Whites

20-YEAR
George F. Darner
Edward Hall, Jr.
Donald I. Stukey
Everette E. Reppond
George L. Loelkes, Jr.

10-YEAR
Dan G. Canfield
Linda M. Wools

SPECIAL ACHIEVEMENT
Carol Willeford

QUALITY INCREASE
Willis R. McFarlin

PERSONNEL ACTIONS (through October 31)

Accessions
Mary B. Childs, CA, GS-3, Br. of Carto., Carto. Sect., Comp. Unit, pay adj. to full-time
Stephan W. Miller, transfer from Geography
Eddie L. Schwertz, Jr., same as above

Losses
William T. Prouty, opt. retire.

Reassignment
Glenn L. Osick, C., GS-13, Br. of P&P, Off. of the Br. Chief, Spec. Asst. for Map Requirements, to SC, GS-13, Br. of Photogr., Off. of the Br. Chief

Promotion
Robert E. Rinehart, Surv. Tech., GS-5, Br. of F.S., Field Dist., to Carto. Tech., GS-6, same
Allen V. Giebink, C, GS-9, Off. of the Chief, Carto. Trainee Group, to same, GS-11, Br. of F.S., Geod. Sect.
Phillip G. Havens, C, GS-12, Br. of P&P, Program Control Section, to SC, GS-13, Br. of P&P, NCIC-M
David A. Lenzi, CT, GS-5, Br. of Photogr., Photogr., Oper. Sect., to same, GS-6, same
Ricky D. Mace, same as above
Jerry W. Wagner, C, GS-9, Off. of the Chief, Carto. Trainee Group, to same, GS-11, Br. of Photogr., Photogr. Oper. Sect.

Continued on page 16

PROMOTIONS (CONT)

J. Patrick Ryan, Supv. Cartographer, GS-13, Branch of Field Surveys, Field District

Robert A. Graber, Supv. Cartographer, GS-13, Br. of Photogr., Photogr. Oper. Sect.

Richard E. Parker, Supv. Cartographer, GS-13, Br. of Photogr., Photogr. Oper. Sect.

Donna S. Story, CA, GS-4, Br. of Photogr., Photogr. Oper. Sect., to CT, GS-5, same

Detail (NTE 60 days)

Walter D. Parkinson, SC, GS-13, Br. of Carto., Off. of the Br. Chief, to same, same, Br. of P&P, Off. of the Br. Chief

Detail (NTE 120 days)

Gerald L. Eckert, CT. GS-9, Br. of Photogr., Photogr. Oper. Sect., to same, same, Br. of Photogr., Photogr. Oper. Sect., different position discription

Raymond B. Douglas, CT, GS-9, Br. of Photogr., Photogr. Oper. Sect., to same GS-11, same, different position discription

Jack A. McFarland, CT, GS-11, Br. of Photogr., Photogr. Oper. Sect., to same, same, Br. of Photogr., Tech. Plan. Sect., Photogr. Contracts and Review Unit

Russell Flegel, CT, GS-9, Br. of Photogr., Photogr. Oper. Sect., to same, same, same, different position discription

Termination of Detail (NTE 120 days

Richard E. Parker, SC, GS-13, Br. of Photogr., Photogr. Oper. Sect., to Same, GS-12, same

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OTHER PERSONNEL ACTIONS

Morgan Malone, Public Information Officer, GS-12, Assistant Division Chief for Information and Data Services, Public Inquiries Office, Reston, Virginia

Virginia G. Miles, Administrative Officer, GS-14, Office of the Division Chief, Administrative Office, Reston, Va., promotion

Donald C. Barnett, Supv. Cartographer, GS-15, Assistant Chief, Eastern Mapping Center, Reston, Va., reassignment

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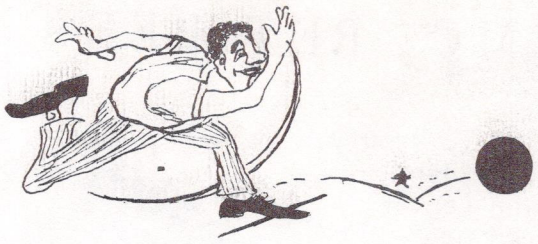

USGS EARLY BIRDS BOWLING NEWS

by Marshall Creighton

The first quarter of the 1980-81 bowling season ended with a real nail-biter of a finish. With six nights completed and one to go, the Dirty Digits had a 2 point lead over Preparation H. But on the final night, Preparation H withstood the pressure and won all 7 points, while the Dirty Digits managed to win 5. Tied at 36 and 13, a one game rolloff was played to determine the winner. It was a hard fought battle, with Preparation H emerging as the winner by a final score of 786 to 762.

As of November 6, these are the current standings:

	2nd Quarter	Season
Okies	15-6	38-32
Dirty Digits	14-7	50-20
Strikers	14-7	41-29
Preparation H	11-10	47-23
Rejects	11-10	24-46
Bozzoes	10-11	27-43
Hits & Mrs	7-14	30-40
Gutter Gropers	2-19	23-40

On the outstanding achievement list are:

	Men	
High Average	A. Peed	167
High Series Scratch	D. Sawyer	569
High Game Scratch	L. Jontz	207
High Series Handicap	P. Lampert	670
High Game Handicap	J. Meyer	255
	Women	
High Average	R. Grimm	133
High Series Scratch	C. Leake	430
High Game Scratch	P. Malam	180
High Series Handicap	M. McKeown	627
High Game Handicap	D. Kelly	239

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